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Applicant: Matt Beaumont
Serial No.: 09/778,242
Filed: February 6, 2001

Art Unit : 2872
Examiner : Arnel Lavarias

Title : CALIBRATION FOR OPTICAL FILTER

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

Attached to this facsimile communication cover sheet is Resubmission of Brief on Appeal and Amendment, faxed this 11th day of February, 2005, to the United States Patent and Trademark Office.

Respectfully submitted,

Date: February 11, 2005

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RESUBMISSION OF BRIEF ON APPEAL AND AMENDMENT

Sir:

In response to the notice of noncompliant appeal brief mailed January 18, 2005, applicant herewith resubmits the appeal brief including a statement of the status of the remaining claims, and an addition of claims 4, 6 and 9-33 in the pending claims.

The rejection correctly notes that claim 7 incorrectly listed its dependency as dependent on canceled claim 5. This has been corrected herewith. An amendment follows requesting correction of the dependency of claim 7.

In the claims: Claim 7 line 1, change "5" to --1--

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February 11, 2005
Date of Transmission

Jeanne Amour-Rice
Signature

Jeanne Amour-Rice
Typed or Printed Name of Person Signing Certificate

A notice on the merits is requested.

Respectfully submitted,

Date: 02/11/05

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RESUBMISSION OF BRIEF ON APPEAL AND AMENDMENT

BRIEF ON APPEAL

Applicant herewith files this Brief on Appeal, thus perfecting the Notice of Appeal which was originally filed on January 23, 2004. The headings and sections required by 37 CFR 1.192 follow:

(1) Real Party in Interest

The application is currently assigned to Production Resources Group Inc., who is, hence, the real party-in-interest.

(2) Related Appeals and Interferences

There are no known related appeals or interferences.

(3) Status of Claims

Claims 1, 2, 7 and 8 are pending. Each of these claims are rejected. Claims 3 and 5 were previously cancelled. Claims 4-6 and 9-33 are withdrawn from consideration.

(4) Status of Amendments

A Response after Final was filed on December 23, 2003. In a subsequent Advisory Action, paper number 20040114, the Patent Office indicated that the Amendment after Final was not

persuasive and would not place the case into condition for allowance.

(5) **Summary of Invention**

The present system relates to an optical filter with calibration that optical filter. Figure 1 shows an example of such a filter, with the last full paragraph on figure 2 explaining how that filter works. As explained in the third paragraph on page 3, each of the number of different luminaries should produce the same color. However, no two filters will, in general, be exactly the same (see column 4). Therefore, each of the filters 14 and 15 is calibrated based on a standard. In operation, page 5 explains how the filter is calibrated, and how a map of points is formed, see the third paragraph on page 4. As explained at page 6, lines 4-5 "each map is unique to each filter". The filter information is then used a to show angular position as a function of cut on, see page 8, lines 1-3. In this way, the filters which are not in general exactly the same, will produce output colors which are compensated for the differences between the filters.

(6) Issues

Are claims 1-2 properly rejected under 35 U.S.C. 102(b) as being anticipated by Katagiri? Are claims 1-2 properly rejected under 35 USC 102(b) as being anticipated by Mactaggart? Are claims 7-8 properly rejected under 35 USC 103 as being unpatentable over Katagiri in view of So and/or Mactaggart in view of So?

(7) Grouping of Claims

None of the claims rise and fall together besides those specifically stated herein. Claims 1 and 2 rise and fall together.

(8) Argument

Rejections under Section 102

Rejection under Section 102(b) based on Katagiri.

Scope and contents

Katagiri teaches a light source and light generation technique. One aspect, described in column 22, is a wavelength tunable optical filter. Column 22 describes the wavelength tunable optical filters. In order to form a color, a location on the optical filter is found. As explained in column 22, lines 56-62, the ROM 134 stores data of center transmission

wavelengths versus control parameters. This data is used to determine the bandwidth.

Differences between the prior art and the claims at issue.

Claim 1, for example, requires an optical device with an optical filter that has characteristics that vary across a gradient axis, a memory that stores calibration light, a filter moving element that moves the filter, and a filter moving element also includes servo electronics that correlate a list of specified colors to positions for the colors. Those positions are based on the calibration data that is individual to the specific optical filter.

However, with all due respect to the examiner's position, there is no teaching or suggestion of calibration data that is individual to the specific optical filter in Katagiri.

In the response to arguments in the last official action, September 25, 2003, at item 2, the rejection states that "Katagiri specifically teaches that calibration data specific to filter 90 is stored in ROM (see, for example, column 22, lines 5-63)". However, it is respectfully suggested that this contention is based on hindsight; not on the teaching of Katagiri. Note that in order to find calibration information, certain techniques are necessary as described above in the

present description. One must find the specific position of the filters and where that specific position, or specific color, is. This is not simply a method of obtaining calibration information from some publicly available source; in fact, quite the contrary. Each optical filter needs to be individually tested, based on the realization that no two filters are exactly the same. Column 22, lines 6-65 teach the filters and how the filters carry out filtering by varying the center transmission wavelength based on the rotation angle (see column 22, line 21). This rotation angle must be set for a specific wavelength. The ROM 134 stores data of the center transmission wavelength versus the control parameters. There is no teaching or suggestion in Katagiri, that this ROM includes calibration data which is specific to the individual filter.

In fact, it is respectfully suggested that it is logically inconsistent to think that such data could be stored in ROM. If the data were individual for each filter, ROM would make no sense. If one need to change filters, the ROM would make the unit worthless.

In any case, there is no calibration information stored in Katagiri. Katagiri simply stores a table of transmission wavelength versus control parameters. There is no teaching or suggestion that this includes information which is "individual

to the specific optical filter in said optical device". In fact, a reasonable reading of Katagiri indicates that this read only memory is the same in each of the plurality of filters, and is not individual to the specific filter.

The rejection states that "calibration information" is mentioned in column 22. However, column 22 simply states that transmission wavelength versus control parameters are stored in ROM 134. It teaches nothing about calibration data "which calibration data relates to optical characteristics which are individual to the specific optical filter in said optical device". The word "calibration" is certainly never used.

Therefore, with all due respect to the Examiner's position, it is respectfully suggested that the contention that there is calibration data stored in ROM is based on hindsight, not on the teaching of Katagiri.

Rejection based on Mactaggart

Scope and contents of Mactaggart

Mactaggart teaches an infrared device using a continuous filter wheel that rotates to transmit a narrow band of information. The stepper motor 26 rotates the filter continuously in response to a signal, see column 2, lines 60-62. An integrating sphere then receives the IR information. The

filter wheel includes an opaque portion which is used for timing. The basic system is then used to determine constituent particles.

Admittedly, Mactaggart uses the word "calibration table". However, it does so in a context which is very clearly different than the present specification. Moreover, it does not teach or suggest using the calibration table in the same way as claimed. Specifically, column 6, lines 62-67 state that "... each of the detector outputs is sampled at 64 different positions of filter wheel 24... These positions of filter wheel are 24 correlated with wavelength by means of a calibration table (not shown) stored in memory.".

Differences between the prior art and the claims at issue

1) The calibration table as described simply includes a relationship between the positions of filter wheel, and wavelength. One having ordinary skill in the art would realize that this is simply a lookup table between filter positions and wavelength. There is no teaching or suggestion that this calibration data "relates to optical characteristics which are individual to the specific optical filter in said optical device...". Quite simply, even though the word "calibration" is used, there is no teaching or suggestion that the calibration is

individual calibration, as claimed. Rather, the description of the calibration table is a description of a simple lookup table relationship between position and wavelength.

2) Claim 1 requires that the filter moving element moves the filter to change a position based on the calibration table. The filter moving element includes a motor and servo electronics driving the motor. That servo electronics includes a memory table with a list of specified colors and positions for those colors, where those positions include the calibration data. However, Mactaggart does not teach using that "calibration table" to move the color wheel. Rather, Mactaggart uses the calibration table to interpret the measurements from the positions of the filter wheel, correlating those with wavelengths. It does not use the calibration table when moving the filter to a specified position, but rather uses the "calibration table" to evaluate the positions so obtained. Therefore, this is clearly the different claimed system, even if one could read many more limitations into "calibration" than are intended.

3) The memory table in claim 1 requires "a list of specified colors, and positions for the specified colors", while Mactaggart uses infrared. While the rejection makes an argument that center wavelength is correlated to color, there is no

teaching or suggestion of maintaining a list of specified colors and positions, as claimed. Certainly there is teaching of center wavelength, but not a list of colors.

For each of these reasons, claim 1 should be allowable, along with claim 2 which depends therefrom.

Rejections of claims 7 and 8 under 35 USC 103.

Claims 7 and 8 specify the form of the calibration data. Claim 7 specifies that the calibration data is a table of points indicating a specified position of a cut in curve, with claim 8 specified that the position is 50%. The rejection cites the additional reference to So and states that So shows a transmission table is stored as calibration data for a table in computer memory. Therefore, the hypothetical combination used for the rejection would include the limitations of Kartagiri and Mactaggart described above, combined with So.

Referring to column 3, line 62 through columns 6, line 65, of So, however, there is no teaching or suggestion in So of storing any kind of calibration information as a table of points indicating a specified position on a cut on curve or as a 50% position. So does describe a calibration table for a transmission ratio curve. See, for example, column 3, lines 50-

55. The calibration table stores a transmission ratio (see, for example, column 4, lines 12-15 and lines 19-21. In fact, So explains that interpolation may be necessary if the transmission ratio that is measured falls between two of the values which are stored in the table. It is therefore apparent that this is a very <u>different kind of calibration system</u> than the present system.

Nowhere is there any teaching or suggestion in So that the calibration data is a table of points indicating a position in a cut on curve. Rather, So teaches different transmission ratios and teaches nothing about a cut on curve. Nor is there any teaching or suggestion of the specified position being a 50% position as defined by claim 8. Therefore, these dependent claims define additional aspects which are nowhere taught or suggested by the hypothetical combination of the primary references with So.

In view of the above, and all due respect to the examiner's position in this matter, applicants respectfully suggest that the position of the Patent Office interprets the cited references although teach more than they actually do in fact teach. In fact, none of the references, either individually or combined, fairly teach or suggest the subject matter now claimed.

Therefore, and in view of the above amendments and remarks, all of the claims should be in condition for allowance.

It is believed no fee is due, however, please apply any other charges or credits to Deposit Account No. 06-1050.

Respectfully submitted,

Date: 02/11/05

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Appendix of Claims

1. An apparatus, comprising:

an optical device including an optical filter having characteristics that vary across a gradient axis thereof; and

a memory unit, storing calibration data for the specific optical filter, which calibration data relates to optical characteristics which are individual to the specific optical filter in said optical device, and which affects the way said optical filter is used;

a filter moving element, which moves said filter to change a position of the gradient axis that intersects said optical axis and thereby change a characteristic of filtering, wherein said filter moving element is responsive to said calibration data,

said filter moving element including a motor, and servo electronics driving the motor, said servo electronics including a memory table which includes a list of specified colors, and positions for the specified colors, and wherein said positions include said calibration data.

2. An apparatus as in claim 1, further comprising an optical source, producing optical energy along an optical axis thereof, said optical axis intersecting said gradient axis of said optical filter.

4. An apparatus as in claim 1, wherein said filter is round and said gradient axis extends around a circumference of said filter.

6. An apparatus as in claim 5, wherein said optical filter includes a position marking, marking a specified point on the optical filter.

7. An apparatus as in claim 1, wherein said calibration data includes a table of points indicating a specified position in a cut on curve.

8. An apparatus as in claim 7, wherein said specified position is a 50 percent position.

9. A lighting apparatus, comprising:

an optical source, projecting light along an optical axis;

an optical filter, having an optical characteristic that varies according to a parameter thereof, located in a position intersecting said optical axis, and such that the parameter can be varied on said optical axis;

a controllable motor, coupled to move said optical filter to vary said parameter relative to said optical axis; and

a controller for said motor, said controller including an indication of specified colors on said optical filter, and specified parameter values for said colors, said specified parameter values including data which is specific to the individual optical filter.

10. An apparatus as in claim 9, wherein said controller includes a lookup table with a plurality of parameter values related to color values.

11. An apparatus as in claim 9, wherein said parameter includes a position on said filter represented by a gradient axis, wherein said gradient axis intersects said optical axis, and said controllable motor moves said optical filter to move a position of intersection between said gradient axis and said optical axis based on said parameter values in said controller.

12. An apparatus as in claim 11, wherein said controller includes a memory table having a plurality of position values, related to color values, said position values including calibration data which is specific to the individual filter.

13. An apparatus as in claim 11, wherein said optical filter includes a hub which contains the filter, and which

includes a position detecting device which sets a specified position of the hub.

14. A method, comprising:

forming an optical filter assembly having an optical characteristic that varies according to a parameter thereof;

using an optical device to form information about said optical characteristic on the optical filter, and to obtain information which is individual for each specific optical filter; and

using said information which is individual for each specific optical filter to modify a profile used to move said optical filter.

15. A method as in claim 14, wherein said profile used to move said optical filter is a profile that drives a motor.

16. A method as in claim 14, wherein said using an optical device comprises using a spectrophotometer to scan a region of the filter to form a set of data indicating transmittances as a function of wavelength.

17. A method as in claim 16, further comprising analyzing said data to find a specified point in a slope curve formed by

said data, said specified point forming said information which is individual to each specific optical filter.

18. A method as in claim 17, wherein said specified point in said slope curve is at 50 percent of the cut on point.

19. A method as in claim 17, wherein said specified point in said slope curve is a value that allows any color at any point in the filter to be represented by a single value.

20. A method as in claim to 14, wherein said optical device has a first aperture which is different than a second aperture at which said optical filter will be used.

21. A method as in claim 20, further comprising compensating for an aperture mixing effect caused by said different aperture.

22. A method as in claim 21, wherein said compensating comprises determining values at different scans in the first aperture, and averaging said values over said second aperture.

23. A method as in claim 22, wherein said optical filter assembly is substantially round, and said determining values comprises determining radial segment values.

24. A method as in claim 22, wherein said determining values comprises determining a first area of the segment encompassed by said first aperture, and determining a proportion of said first area within the second area represented by an area of said second aperture.

25. A method as in claim 22, wherein said compensating comprises determining an area of the first aperture and an area of the second aperture, and a ratio between said areas, and weighting a value of said first aperture according to said ratio.

26. A method, comprising:

projecting light along an optical axis;

placing an optical filter assembly along said optical axis in a location such that a position of said optical filter assembly on said optical axis causes a different optical color effect to be caused by said optical filter assembly;

moving said optical filter assembly with the motor;

setting a memory map for said motor which is common for each of a plurality of different optical filter assemblies, and which relates positions on said motor to different colors for

said each of said plurality of different optical filter assemblies; and

changing said memory map using individual data which is specific for each individual optical filter assembly.

27. A method as in claim 26, wherein said changing comprises determining individual features of said optical filter assembly, and color transmittances of said optical filter assembly, forming data indicative of said individual features, and using said data to change said memory map.

28. A method as in claim 27, wherein said forming data comprises determining a specified point in a slope curve for each of a plurality of areas which is effective to allow characterization of the color of any point in the filter as represented by a single value.

29. A method as in claim 28, wherein said specified point in the slope curve is 50 percent of the cut on value.

30. A method as in claim 27, wherein said determining individual features, comprises scanning the filter to determine transmittances of the filter at different locations, producing a map indicating specified cut on points as functions of positions

in said filter, compensating for a difference in apertures between said scanning and an aperture of the light projected along the optical axis, and using compensated data to change said memory map.

31. A method, comprising:

forming a plurality of optical devices including optical filters with characteristics that vary along a gradient axis thereof;

calibrating said plurality of optical filters to determine color characteristics thereof and forming calibration data indicative of said calibrating; and

commanding each of said plurality of optical devices to produce the same color, and using said calibration data in each of said optical devices to ensure that each of said optical devices produces the same color.

32. An apparatus, comprising:

an optical lamp, projecting light along an optical axis, said light having a first aperture size;

a color filter, having a projection area located along said optical axis, said projection be area located along a gradient

axis of said color filter, and said color filter having a characteristic whereby color projected by the color filter varies along said gradient axis;

a motor, connected to move the color filter, into locations such that different areas of said gradient axis are presented to said optical axis; and

a motor controlling element, including a servo mechanism which drives said motor, and stored data which represents a position of said color filter that corresponds to a specified color, said data including calibration data which is individual and specific to the color filter associated with said motor controlling element.

33. A method, comprising:

forming a plurality of optical devices including optical filters with characteristics that vary along a gradient axis thereof;

calibrating said plurality of optical filters using a device that has a first aperture to determine color characteristics thereof and forming calibration data indicative of said calibrating;

compensating said calibration data for a difference between said first aperture, and a second aperture that will be used to project light using said plurality of optical devices; and

using the compensated calibration data to commanding each of said plurality of optical devices to produce specified colors.